

## 14.0 INTRODUCTION TO DRAFTING/CADD

**Prerequisite:** Fundamentals of Technology

An entry level course in Communications Systems which addresses the concepts needed to transfer ideas into an easily understood graphic language, designs or drawings. The use of drawing tools, including mechanical devices and computer software essential for student studies. Each of the major areas of drafting and design should be explored on an introductory level.

An entry level course in Communications Systems designed to provide students with an understanding of the operation and features of a current industrial computer aided drafting/design (CADD) system. Emphasis is placed on the application of computer software in solving basic architectural, structural, electronic or mechanical drafting problems. The purpose of the course is to assist individuals in making meaningful occupational and educational choices. Basic technical information and laboratory experiences directly related to the operation and application of computer software is provided in a hands-on approach. **This course is selected by a district in lieu of the series of Introductory courses TE 0220-TE 0228. Can 0303 be added so that I can use this curriculum for all 3 classes?**

PROGRAM TASK LISTING EFFECTIVE DATE: November 2002

PROGRAM AREA: Technology Education

PROGRAM TITLE: Introduction to Drafting/CADD

IDAHO CODE NUMBER: TE 0303

- 14.01 Demonstrate the ability to work safely with a variety of technologies.
- 14.02 Demonstrate interpersonal skills as they relate to the workplace.
- 14.03 Identify and apply methods of information acquisition and utilization.
- 14.04 Apply basic skills in communications, mathematics, and science appropriate to technological content and learning activities.
- 14.05 Demonstrate and apply design/problem-solving processes.
- 14.06 Express an understanding of technological systems and their complex interrelationships.
- 14.07 Demonstrate the ability to properly identify, organize, plan, and allocate resources.

- 14.08 Discuss individual interests and aptitudes as they relate to a career.
- 14.09 Demonstrate employability skills and habits.
- 14.10 Demonstrate an understanding of entrepreneurship.
- 14.11 Make an informed and meaningful career choice.
- 14.12 Demonstrate proper and safe procedures and technical knowledge and skills in the use and care of drafting instruments, materials and equipment.
- 14.13 Demonstrate technical knowledge, skills and applications common to all types of drafting including computer-aided drafting (CAD).
- 14.14 Demonstrate technical knowledge and skills for making drafting sketches.
- 14.15 Demonstrate technical knowledge and skills for making orthographic drawings.
- 14.16 Demonstrate technical knowledge and skills for making oblique pictorial drawings.
- 14.17 Demonstrate technical knowledge and skills for making isometric pictorial drawings.
- 14.18 Demonstrate technical knowledge and skills for making aerodynamic drawings.
- 14.19 Demonstrate technical knowledge and skills for reproducing a computer aided drawing on a plotter.
- 14.20 Demonstrate technical knowledge and skills for making a computer-aided drawing (CAD).

PROGRAM TASK LISTING EFFECTIVE DATE: July 2002

PROGRAM AREA: Technology Education

PROGRAM TITLE: Introduction to Drafting/CADD

IDAHO CODE NUMBER: TE 0303

14.01 DEMONSTRATE THE ABILITY TO WORK SAFELY WITH A VARIETY OF TECHNOLOGIES--

The student will be able to:

1. Select appropriate tools, procedures, and/or equipment needed to produce a product.
2. Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment needed to produce a product.
3. Demonstrate knowledge required to maintain and troubleshoot.
4. Follow laboratory safety rules and procedures.
5. Demonstrate good housekeeping at work state and within total laboratory.
6. Identify color-coding safety standards.
7. Explain fire prevention and safety precautions and practices for extinguishing fires.
8. Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

14.02 DEMONSTRATE INTERPERSONAL SKILLS AS THEY RELATE TO THE WORKPLACE--

The student will be able to:

1. Perform roles in a student personnel system or in the Idaho Technology Student Association (ID-TSA).
2. Participate as a member of a team.
3. Teach others new skills.
4. Identify skills needed to serve clients/customers.
5. Demonstrate leadership skills.
6. Describe strategies necessary for negotiating agreements.
7. Demonstrate the application of skills necessary to work with people of diverse backgrounds.
8. Form an understanding and appreciation for work after listening to or observing technology workers.
9. Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.

10. Form an understanding and appreciation for the roles and work of co-workers.

14.03 IDENTIFY AND APPLY METHODS OF INFORMATION ACQUISITION AND UTILIZATIONS--

The student will be able to:

1. Define terms related to computers.
2. Identify and describe methods of information acquisition and evaluation.
3. Discuss advantages and disadvantages in the application of technologies.
4. Produce a plan to organize and maintain information relevant to emerging technologies.
5. Comprehend and communicate information relevant to emerging technologies.
6. Demonstrate the use of computers to process information.

14.04 APPLY BASIC SKILLS IN COMMUNICATIONS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--

The student will be able to:

1. Identify and explain the main and subordinate ideas in a written work.
2. Distinguish different purposes and methods of writing, identify a writer's point of view and tone, and interpret a writer's meaning.
3. Define unfamiliar words by use of structural analysis, decoding, contextual clues, or by using a dictionary.
4. Distinguish fact from opinion.
5. Read critically by asking pertinent questions, by recognizing assumptions and implications, and by evaluating ideas.
6. Select, relate, and organize, ideas using outlining and/or graphic organizers and develop the ideas in coherent paragraphs.
7. Improve one's own writing by restructuring, correcting errors, and rewriting.
8. Gather and organize information from primary and secondary sources; write a report using this research; quote, paraphrase, and summarize accurately; and cite sources properly.
9. Vary one's writing style, including vocabulary and sentence structure, for different readers and purposes.
10. Write logical and understandable statements, or phrases, to accurately fill out commonly used forms.
11. Compose unified and coherent correspondence, directions, descriptions, explanations and reports.

12. Participate critically and constructively in the exchange of ideas, particularly during class discussions and conferences with instructors.
13. Conceive and develop ideas about a topic for the purpose of speaking to a group; choose and organize related ideas; present them clearly in Standard English; and evaluate similar presentations by others.
14. Use the mathematics of:
  - integers, fractions, and decimals;
  - ratios, proportions, and percentages;
  - roots and powers;
  - algebra;
  - geometry.
15. Make estimates and approximations, and judge the reasonableness of a result.
16. Use elementary concepts of probability and statistics.
17. Draw, read, and analyze graphs, charts, and tables.
18. Ask appropriate scientific questions and recognize what is involved in experimental approaches to the solutions of such questions through familiarity with laboratory and fieldwork.
19. Organize and communicate the results obtained by observation and experimentation.
20. Apply the basic principles of biology, physics, and chemistry: (properties of matter; structure of compounds; concepts of motion; temperature, pressure and volume; work, power, force and energy; machines; human cell structure).
21. Identify problems rooted in basic biology, physics, or chemistry (effects of hazardous materials on health and safety, effects of drugs on health, trouble shooting problems on a machine).

14.05 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--

The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.
4. Document each step of the design/problem-solving process.
5. Demonstrate "brainstorming" as a process to solve problems.
6. Define "critical thinking" and its value in the problem-solving process.

14.06 EXPRESS AN UNDERSTANDING OF TECHNOLOGICAL SYSTEMS AND THEIR COMPLEX INTERRELATIONSHIPS--

The student will be able to:

1. Demonstrate knowledge of how social, organizational, and technological systems work.
2. Explore methods used to monitor and correct performance of technological systems.
3. Design and implement an optimal solution to a given problem.
4. Outline major historical technological developments or events.
5. Identify recent advances in technology.
6. Explain problem-solving roles of technology.
7. Forecast a technological development or event.
8. Define technology.

14.07 DEMONSTRATE THE ABILITY TO PROPERLY IDENTIFY, ORGANIZE, PLAN, AND ALLOCATE RESOURCES--

The student will be able to:

1. Demonstrate the ability to select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
2. Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
3. Demonstrate the ability to acquire, store, allocate, and use materials or space efficiently.
4. Display knowledge of the efficient use of human resources.

14.08 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--

The student will be able to:

1. Describe individual strengths and weaknesses.
2. Discuss individual interests related to a career.
3. Identify careers within specific areas of technology.
4. Explore careers within specific areas of interest.

14.09 DEMONSTRATE EMPLOYABILITY SKILLS AND HABITS--

The student will be able to:

1. Identify employment opportunities.
2. Apply employment seeking skills.
3. Interpret employment capabilities.
4. Demonstrate appropriate work behavior.
5. Maintain safe and healthy environment.
6. Maintain businesslike image.
7. Maintain working relationships with others.
8. Communicate on the job.
9. Adapt to change.
10. Demonstrate a knowledge of manufacturing.
11. Perform mathematical calculations.

12. Compile a portfolio.

14.10 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP--

The student will be able to:

1. Define entrepreneurship.
2. Describe the importance of entrepreneurship to the American economy.
3. List the advantages and disadvantages of business ownership.
4. Identify the risks involved in ownership of a business.
5. Identify the necessary personal characteristics of a successful entrepreneur.
6. Identify the business skills needed to operate a small business efficiently and effectively.

14.11 MAKE AN INFORMED AND MEANINGFUL CAREER CHOICE--

The student will be able to:

1. Make a tentative occupational choice based on the information learned and interest developed in this course.
2. Review tentative occupational choices based on the information learned and interest developed in this course.

14.12 DEMONSTRATE PROPER AND SAFE PROCEDURES AND TECHNICAL KNOWLEDGE AND SKILLS IN THE USE AND CARE OF DRAFTING INSTRUMENTS, MATERIALS AND EQUIPMENT--

The student will be able to:

1. Define communications technology.
2. Outline major technological developments and events in the history of communications systems technology.
3. Identify recent advances in communications technology.
4. Forecast a development or event in communications technology.
5. Identify the basic tools and instruments for drafting.
6. Interpret a blueprint, working drawing or other type of dimensional technical illustration.
7. Produce a working drawing or technical illustration using drafting tools, instruments, and skills.

14.13 DEMONSTRATE TECHNICAL KNOWLEDGE, SKILLS AND APPLICATIONS COMMON TO ALL TYPES OF DRAFTING INCLUDING COMPUTER-AIDED DRAFTING (CAD)--

The student will be able to:

1. Outline major technological developments in the history of drafting and design tools and equipment.
2. Make freehand sketches.
3. Produce a drawing using drafting instruments.
4. Set up a computer to produce a drawing.

14.14 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS FOR MAKING DRAFTING SKETCHES--

The student will be able to:

1. Illustrate a technical idea by means of a sketch.

14.15 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS FOR MAKING ORTHOGRAPHIC DRAWINGS--

The student will be able to:

1. Explain the theory of orthographic projections.
2. Identify the six principal views of an object.
3. Produce a three-view orthographic drawing.

14.16 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS FOR MAKING OBLIQUE PICTORIAL DRAWINGS--

The student will be able to:

1. Define types of pictorial drawings.
2. Produce an oblique pictorial drawing.

14.17 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS FOR MAKING ISOMETRIC PICTORIAL DRAWINGS--

The student will be able to:

1. Discuss the isometric drawing procedures.
2. Produce an isometric pictorial drawing.

14.18 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS FOR MAKING AERODYNAMIC DRAWINGS--

The student will be able to:

1. Discuss aerodynamic designs of aircraft and automobiles.
2. Produce an aerodynamic scale drawing.

14.19 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS FOR MAKING A COMPUTER-AIDED DRAWING (CAD--

The student will be able to:



1. List the major components of a computer-aided drafting system and their functions.
2. Demonstrate technical knowledge and skills in setting up a CAD system.

14.20 DEMONSTRATE TECHNICAL KNOWLEDGE AND SKILLS FOR REPRODUCING A COMPUTER-AIDED DRAWING ON A PLOTTER--

The student will be able to:

1. Produce a computer-aided drawing, which can be displayed by means of a computer.

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